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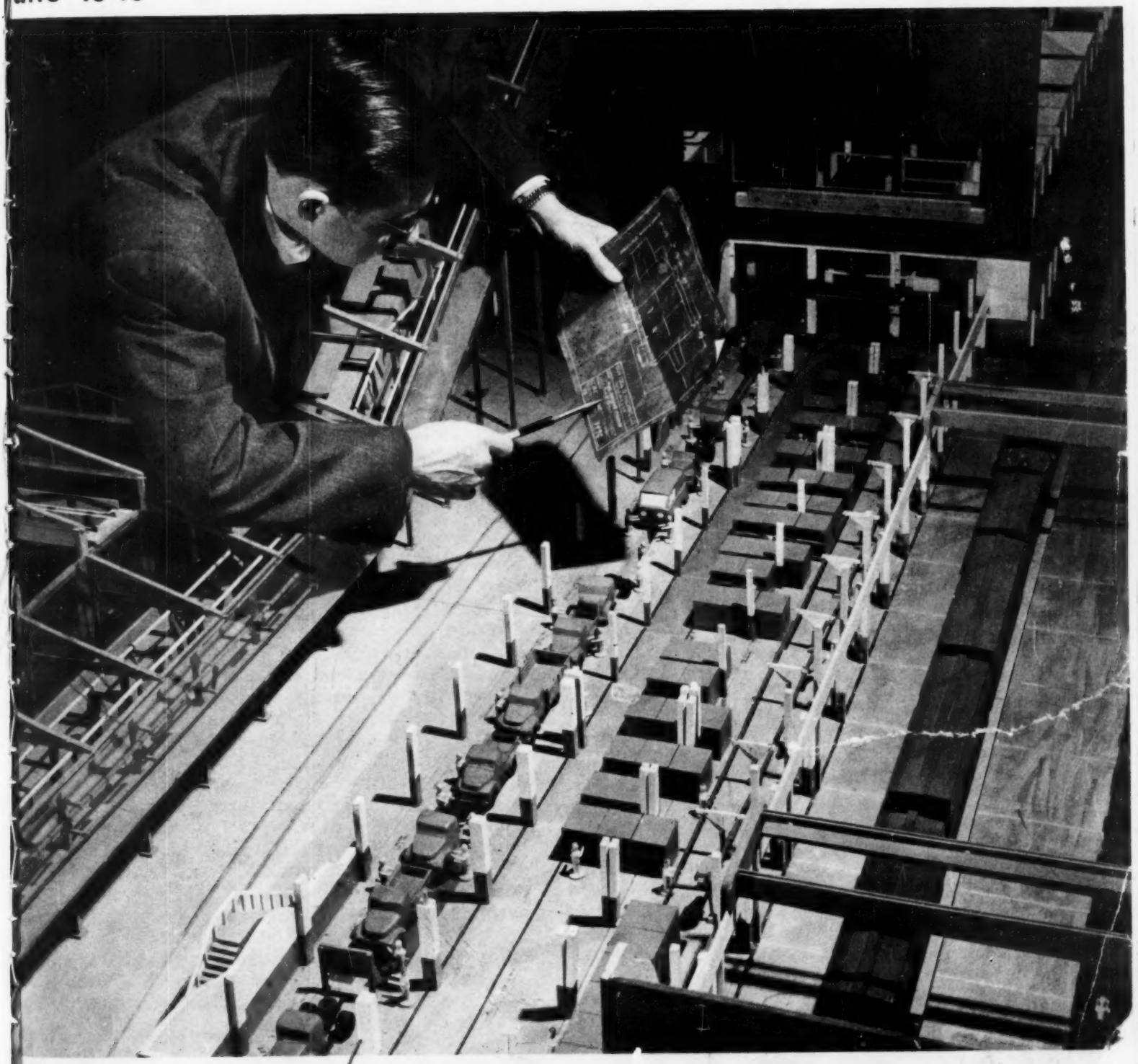

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One Year's Growth

Our first anniversary which fell on January 12th furnished a good time for looking backward on the progress made thus far and ahead on our hopes and plans for the years to come. It is hoped that each member, Senior, Junior or Student will join with me in a personal appraisal of what A.I.I.E. has meant to him and what he has meant to the organization.

We have grown from the little group of twelve that voted to start a society and to invite others of like interest to join with them until we now have approximately 500 Junior and Senior members and about 750 members in student chapters. We have received favorable attention from many Industrial Engineering faculties, who because of lack of accreditation or other local reasons have had to postpone the formation of student chapters. We have received the endorsement of Mr. Alexander Van Praag, President of the National Society of Professional Engineers. Local chapters have been formed. Many other points of advancement could be cited, but most of our members already know of these through the News Letter which has been published a number of times during the past year.

Looking forward, the most encouraging thing is that we have a definite program and that new members are coming in every day. This program includes, launching of the Journal of Industrial Engineering to provide the same unifying force for our branch of the profession as has been so long enjoyed by the "founder societies" and other professional technical groups through their respective publications. We plan to continue the formation of local chapters in all localities where there are enough members to warrant programs of meetings and local interchange of ideas. We plan to continue contacts with all colleges and universities offering approved instruction in Industrial Engineering until a majority of the leading institutions are represented in our body. We plan to step up the tempo of our publicity work to the end that the entire industrial public shall know more of the work of the Industrial Engineer, and shall learn to recognize him as a true professional man, rather than confuse him with mere technicians or ordinary business operators. We also plan to conduct research in the field of Professional Registration of Industrial Engineers by the 48 states, and concerning the types of positions held by members of our profession. There are of course a number of other points in our forward planning such as that of contacting every eligible Industrial Engineer that can be located to invite him to join with us, but these points will serve to illustrate the program.

Notwithstanding the progress made, it is easy to understand that some members, especially those in remote locations whose only contact so far is through infrequent letters or publications, may well ask the question, "What has A.I.I.E. amounted to, has it been worthwhile for me to join, what do I get out of it?" But I would like to be so bold as to ask you to turn the question around and ask instead, "What have I done for A.I.I.E.? What has the organization and the other member groups gotten from me? Have I obtained any new members, contributed to the formation of a chapter, submitted any material for publication, written in suggestions about ways in which the objectives of our society can be attained, or ways that the objectives should be re-oriented?"

I sincerely hope that all members will continue to view the work of our Institute as an opportunity for mutual service. I feel sure that most of you joined in full realization of the fact that we are not yet big, we do not speak with a powerful voice in the affairs of the great engineering fraternity, but we have the opportunity of doing so one day. Whether or not we will do so depends upon each individual member.

In making the foregoing remarks and suggesting the questions, I have a strong realization of the fact that there are many members who have worked diligently and given freely of themselves to promote our joint aims, and I ask all others to join with me in honoring them and thanking them for their several contributions. Finally I pledge myself to try to contribute more in the coming year and hope that you will join me in this pledge.

Dwight D. Gardner

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The Cover -

Checking a three-dimensional layout against the blueprints from which it was made.

Courtesy - Ford Motor Company

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EDITOR'S PAGE

The Industrial Engineer's Needs

In a matter of but a few years Industrial Engineering has come of age. Until a decade or so ago, technology was the thing. Human problems of production drew second billing. Now, however, the situation is considerably different. Recent developments have caused management and labor to turn to the man with the scientific management tools, the Industrial Engineer.

We have grown up too fast for our own good. We are a big body now, shoulder-to-shoulder with well-established branches of engineering. But we are seriously deficient in those strength-preserving qualities which make for endurance. Our needs are great.

The Industrial Engineer needs a more dynamic and enlarged fraternity. He needs the companionship of men who speak his language.

The Industrial Engineer needs a means of broadening his technical knowledge beyond the confines of his own plant or locality. He needs a medium of communication with which he can exchange ideas and experiences with other Industrial Engineers all over the world.

The Industrial Engineer needs the cooperation of other Industrial Engineers in the matter of public relations. The outstanding accomplishments and potentialities of his profession must be made known to all.

To summarize, the Industrial Engineer needs AIIE because it was founded for the sole purpose of fulfilling these needs. Through AIIE the Industrial Engineering profession can fortify the strength and integrity so necessary for professional recognition in the engineering world.

F. F. Groseclose, Editor-in-Chief

Total Membership Breakdown for AIIE as of May 1, 1949

Student Membership by School

Alabama	- 78
Columbia	-107
Georgia Tech	-136
Northeastern	- 18
Ohio State	-204
Oklahoma A & M	- 77
Pittsburgh	- 66
Syracuse	-127
Texas Tech	- 64
Washington	- 61
TOTAL STUDENTS	938

Active Members by Grade

Junior	- 150
Senior	- 191
TOTAL ACTIVES	341

Grand Total Membership 1,379

FINANCIAL REPORT
American Institute of Industrial Engineers'
January 12, 1948 - January 12, 1949

RECEIPTS

Initiation Fees	$341.00	
Junior Dues	105.00	
Senior Dues	600.50	
Student Dues	424.50	
A.I.I.E. Pins	213.00	
		$1.684.00

DISBURSEMENTS

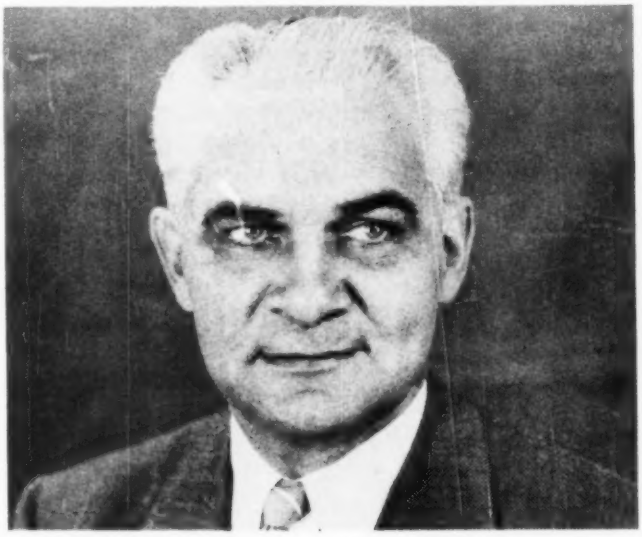
Clerk Hire	$129.51	
Printing	141.58	
Supplies	49.91	
Postage	76.07	
Equipment	133.38	
Chapter Aid	17.85	
Dues to Others	25.00	
Misc. (Band Chgs. Etc.)	10.20	
A.I.I.E. Pins	240.04	
		$ 823.54
Balance in Bank		$ 860.46

J. W. BOSLEY, Jr.
Treasurer, A.I.I.E.

Professor Johnson to Coordinate Student Chapters

Professor C. K. Johnson, head of Industrial Engineering at the University of Alabama, has been appointed Student Chapter Coordinator for the Institute. Professor Johnson replaces Mr. S. Steiner who resigned when leaving the teaching field to take the position of Methods Superintendent at the Oliver Manufacturing Company.

Professor Johnson is also Faculty Advisor of the Alabama Student Chapter of AIIE which consists of sixty members. He will take over the work of corresponding with other colleges and universities regarding the formation of Student Chapters. He will also work with officers and advisors of existing Student Chapters with respect to their problems.



Student Chapters of the American Institute of Industrial Engineers are limited to those colleges and universities having curricula in Industrial Engineering accredited by the Engineers' Council for Professional Development, or about to receive such accredation. Active chapters are operating at the University of Alabama, Columbia University, Ohio State University, Oklahoma A. & M. College, The University of Pittsburgh, and Texas Tech. Others are in the process of formation at Washington University, Georgia Tech, Syracuse University, and Northeastern University.

Requirements for membership in the Institute are high. Senior and Junior members must be either Registered Professional Engineers, or be graduates of accredited curricula in Industrial Engineering. The objectives of the Institute are to raise the professional standards of Industrial Engineering, to render assistance to colleges and universities engaged in teaching the subject, and to serve as a clearing house of information for State Boards of Registration in connection with their problems of Industrial Engineering.

STUDENT CHAPTERS

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Mr. Joseph Hoffman, Chairman
AIIE-Student Chapter
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Tuscaloosa, Alabama

COLUMBIA UNIVERSITY
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AIIE-Student Chapter
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New York, New York

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Atlanta, Georgia (Prov. Pending Acc)

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AIIE-Student Chapter
Northeastern University
Boston 15, Massachusetts

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AIIE-Student Chapter
(Provisional, pending accrediting)
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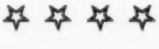


WILLIAM H. SNYDER

W. H Snyder is a native of Baltimore. He was educated in the public school there and studied at Johns Hopkins University.

In 1938 he joined the staff of the Glenn L. Martin Aircraft Company During the war, he was assigned to the plant of a major sub-contractor.

When the Production Control Room was organized, after the pattern developed by Mr. G. T. Wiley, vice-president in charge of manufacture at the Martin Company's Nebraska Division, Mr. Snyder assisted in its development and has supervised the activities since.

During the war he was chosen to supervise the wartime indoctrination program and, in this capacity gave informal weekly talks on company activities.

Senior Chapter Activities

Two chapters have been organized so far. Columbus Chapter started about the same time that the Institute was organized. For a time, the small group of members in the Columbus area met at the University to transact the business of organizing the National group. When the National Constitution was completed and arrangements made for a mail vote to permit all members to participate in the adoption of the constitution and by-laws and the election of officers, they voted to adjourn as an organizing committee of the whole and to reconvene as the Columbus Chapter. Regular monthly meetings have been held since, principally as dinner gatherings. A number of very fine speakers have been obtained by the Program Chairman, Mr. Stephen D. Veirs, and the membership has grown steadily.

The Dayton Chapter was started somewhat later, last October, and the first meetings were held at the home of Mr. James Kohr, President. Growth in interest and attendance has also been steady here and on Monday April 25th a dinner meeting was held with 28 members and guests in attendance.

THE MARTIN SYSTEM OF PRODUCTION CONTROL

BY W. H. SNYDER
Production Control Room
The Glenn L. Martin Company

Since the establishment of the Production Control Room at The Glenn L. Martin plant, management and supervision find that they spend less time reading and analyzing voluminous reports on production activities, yet have less difficulty than ever before in determining where and when preventative or corrective action is necessary. Employees are more aware of the part they play in the business of the Company--and as a result find more interest in their jobs. Customers are shown what happens behind the scenes when they place an order.

The Control Room achieves its objective by the centralization of more than 200 graphs and charts which show the status of all production activities -- from the release of engineering drawings to the delivery of the finished product. The charts are taped to hinged boards for greater accessibility and are posted every day, without being removed from the boards. The room is open to all personnel. Customers' representatives are given full access to it. Problems are thus brought out into the open, where the most widespread efforts can be applied to their solution.

Those who maintain the Control Room enter information on the charts from reports supplied to them, prepare new charts when needed, and familiarize visitors with the information available on the charts. The departments responsible for actual production operations are required to supply the daily reports from which the data are posted.

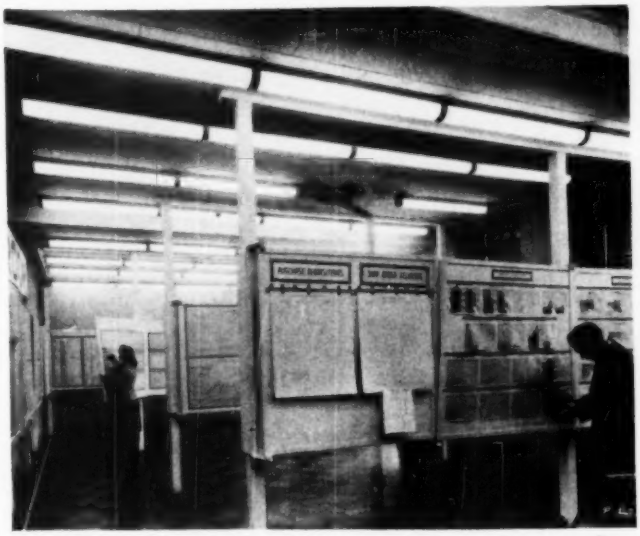
Only two people are needed to maintain the charts and graphs. Preparation of the daily reports for posting requires very little additional time or expense in the contributing departments, because the information accumulated is largely of a nature which they must have on hand for their own activities. In most cases, therefore, the reports to the control room involves merely the transcription of standing information.

Three types of charts are used -- line graphs, bar and pictorial charts. They are as simple in design as possible. They contain information of two kinds: scheduled or planned performance, and actual performance. The former are posted from master production and engineering release schedules. The actual performance lines are posted from the daily reports from the various departments. The method of charting progress follows the same pattern

on all contracts, except that production schedules which involve large numbers of ships are charted in greater detail than are experimental projects or others calling for small quantities.

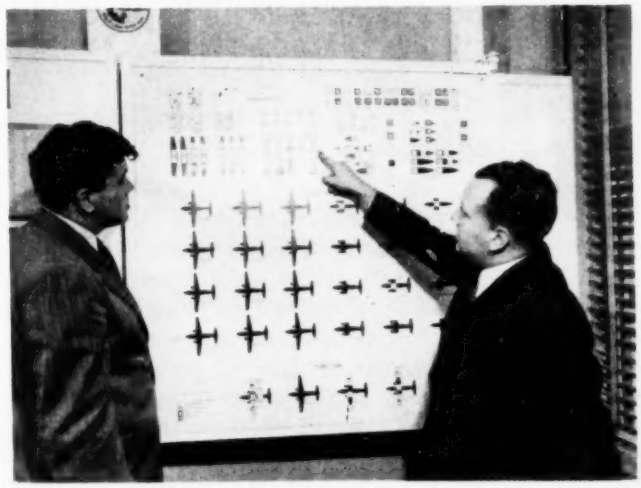
A line graph showing the release of engineering drawings to the manufacturing division is generally the first chart prepared for each aircraft contract. Release of airframe weight is the medium used to express progress. The planned release of the weight is compiled from the engineering release schedule and is plotted on the chart in blue pencil. When drawings are actually released to the production section they are accompanied by a transmittal or "job sheet", which shows how much airframe weight the drawings represent. A copy of each job sheet is sent to the control room, where the released weights are accumulated and posted daily to the graph in red pencil.

Two other lines are posted to this graph. A green line shows the planned or scheduled expenditure of engineering drafting man-hours. This line is based on the engineering release schedule. The actual expenditure of man-hours is posted in purple, and is taken from reports accumulated by the engineering department timekeeping group and sent to the control room.



To control the sequence of release, for manufacturing purposes, approximately 50 smaller graphs are maintained, representing a breakdown of the over-all release graph. Each of these covers a major assembly or system in the airplane, called a "control point." Typical control points are fuselage frames, outer wing spars, fuel system and stabilizers. The scheduled release dates for the control points vary in accordance with the sequence in which the sections must be fabricated for final assembly or installation, and the scheduled dates must be met on each control point as well as on the contract as a whole. The scheduled release lines are plotted in blue and the actual release lines are in red. On these graphs, progress is expressed in percentages instead of airframe weight.

Another graph is used to show engineering department efficiency and performance. It is maintained in conjunction with, and is based on, the over-all weight release and man-hours expenditure graph. Here are plotted the number of engineering drafting man-hours expended per pound of airframe weight released. Scheduled and actual performance are shown respectively in blue and red. The engineering department checks its progress from this graph. From the weight release graphs the manufacturing division determines both the nature and the volume of the engineering releases it will receive -- and when it will receive them.



Bar charts are used to control the availability of purchased materials, of fabricated parts and of completed assemblies. Control point numbers and descriptions are listed at the left, and ship numbers are shown across the top of each chart. Strips of blue and red cellulose tape, each covered with white tape, are attached across the chart -- one blue and one red tape for each control point -- before the chart is mounted on the display board. Performance is shown by progressively peeling off the white tape and exposing the blue scheduled performance tape and the red actual performance tape. Postings can be erased if necessary, by re-applying white tape over the colors. Red tapes which are shorter than their corresponding blue tapes reveal at a glance any control points which are behind schedule.

Control of the work load in the detail parts manufacturing department is simplified by use of a line graph in the control room. The master production plan includes a schedule which specifies how many orders for parts fabrication must be sent into the manufacturing department every day, how many orders must be completed by that department, and how many orders must be available for fabrication -- in order to meet assembly schedules.

These planned activities are plotted on the graph in broken lines; a blue line for orders issued, a red line for orders fabricated, and a green line for orders available for fabrication.

Cont'd on Pg. 14

COOPERATION BETWEEN TECHNICAL AND PROFESSIONAL SOCIETIES

by W. G. Stanton, Assoc. Prof., Dept. Ind. Engr. Ohio State University

(A brief of a speech presented before the Board of Trustees of the Ohio Society of Professional Engineers Annual Convention Meeting, March 17, 1949, Columbus, Ohio.)

Although the American Institute of Industrial Engineers has described itself in its literature as a professional technical society I propose for the purposes of this talk tonight, to define a distinction between professional and technical societies in keeping with the topic of cooperation between the two groups. Therefore I refer to professional societies as organizations devoted to the interests of the entire profession of engineering, organized to speak on behalf of engineers regardless of the branch of the profession in which they practice. Technical societies we will define as groups organized for the purpose of representing a particular branch of the engineering profession such as the electrical, mechanical or industrial engineers, in promoting better professional practices on the part of their members, better public understanding of the work of the branch, and above all to stimulate the members to realize that they are not merely electrical, mechanical or industrial engineers but are preferably professional engineers, sharing in the fortunes and troubles of the entire profession.

Since the engineering profession already suffers from a multiplicity of organizations as was so ably demonstrated by William F. Lamb, President of the Massachusetts Society of Professional Engineers in his article in the April 1946 issue of the American Engineer. One might immediately ask why anyone should think of starting a new organization such as the American Institute of Industrial Engineers. But by answering this question specifically as to the reasons that motivated our group, I will be able to show why both the professional and the technical society needed and fell thereon my theme of cooperation between the two. Industrial Engineering is first one of the newest and least known of the branches of Engineering and consequently is most misunderstood by all segments of the public. Secondly, it is plagued, perhaps more than any other branch, by the presence on the fringes of the profession, of individuals who are only partly trained but represent themselves as Engineers. Thirdly, Industrial Engineering as a branch of the profession needs a definition of the scope limitations and objectives and no one realizes this more clearly than the members of the branch itself. Fourth, because Industrial Engineers perhaps more than the members of the other branches are generally employees, there is great need for a cohesive force to develop and preserve the unity of the branch. Fifth, for the reasons stated with respect to four, there is great need for the professional development of Industrial Engineers.

Briefly the objectives of the American Institute of Industrial Engineering are as follows:

1. To conduct a campaign of self-examination on the part of the members of the branch to the end that we may be assured that the body of professional knowledge of which we are the custodians, is in fact a distinguishable body of engineering knowledge that sets it apart from the activities of the other branches and that it is constantly developed and improved.

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We set out with the goal of patterning our operations to a large extent after the founder societies and with the hope of ultimately developing for our membership the same benefits that the founder societies have rendered to the members of their respective branches but we found already in existence and functioning handsomely, the National Society of Professional Engineers. It therefore seemed foolish for us to undertake to do any of the things which have been enumerated as being the field of the Professional Societies. In the matter of legislation alone it is evident that the protection of engineers from being forced into labor unions by the repeal of the Taft-Hartley act is one for a group such as the NSPE representing all branches of engineering. Likewise the problem of inducing all of the states of the union to pass suitable legislation providing for the registration of professional engineers is not the concern of any one branch because it is entirely reasonable that all professional engineers regardless of branch should go through the same

stages of engineering training, examination, and practical experience before attaining the full status of professional engineering.

On the other hand, if the laws of a particular state or the regulations of a particular board of registration fail to recognize the existence of such a branch as Industrial Engineering we feel that we cannot the National Society of Professional Engineers to take the initiative in attempting to have this situation corrected. Moreover, if the particular state board of registration includes in the examination given to the Industrial Engineering candidates for registration, problems dealing with the very advanced thermodynamics, or asks them to design the concrete dam, to extend between described promlitories and on the other hand, fails to include questions dealing with the principles of job evaluation, establishment of wage incentive plans, or the choice of machinery for described manufacturing operations, it is our responsibility to call attention to these discrepancies and to enlist the aid of the NSPE in having corrected if we are unable to persuade the individuals involved by our own arguments.

Likewise we feel that the National Society has a sufficient job to do in developing publicity to bring about public appreciation of the profession of engineering as a total profession and that the problem of conducting the campaigns to bring about an appreciation of the fact that industrial engineering is really a separate branch of the profession of engineering and an understanding of what industrial engineers do and how they are trained is peculiarly our own problem.

One of the items in which we especially look to the National Society for assistance has to do with the practice of certain individuals calling themselves engineers, who have no right to do so and whether the industrial, mechanical, electrical or any other branch. Lately there has come to our attention the fact that certain technical institutes with very abbreviated courses are using these designations without any qualifying adjective to indicate that their graduates are only technicians and not fully trained engineers, and we sincerely hope that we will be able to work out a plan for you to assist us in putting an end to such practices.

Although I could devote much more time to a discussion of the basis of cooperation between professional and technical societies I believe that the foregoing establishes the pattern as we see it and I would like to proceed to a brief discussion of what we are doing and hope to do in the future to open and extend the actual cooperation.

First of all, we are encouraging all student members of the American Institute of Industrial Engineers to take the engineer-in-training examination as soon as possible. Preferably immediately upon graduating from their engineering course. Secondly, we are endeavoring to limit our membership to individuals who either have at present time or will ultimately have the necessary qualifications to obtain registration and thereby be eligible for membership in the National Society. Thirdly, we plan to give publicity through our official publication, The Journal of Industrial Engineering, to the desirability of being registered in order that men who are employed by industry and who have not yet seen the advantages of obtaining registration even though they have been well trained and long enough in practice to be eligible for registration, will do so. We plan to continue to preach professional attitudes and behavior to the end that our members, even though they may be dilatory in taking the step of becoming licensed engineers will nevertheless be professional engineers in every other respect.

Now, I would like to tell you just a little about the success of the American Institute of Industrial Engineers. It was formed about one year ago by a group of Ohio State alumni who immediately began a mail campaign to induce other industrial engineers to join the organization. As already indicated, the requirements for membership were made high and to our gratification this has appealed to all industrial engineers who heard about the organization and we now have approximately 300 members scattered all over the world. Some being in Portugal, India, Canal zone, Hawaii and elsewhere. As already indicated, it was determined at the outset that for matter of interest all engineers the new group would attach itself to the National Society of Professional Engineers. In some ways you might say that it was a matter of a foster child adopting a parent and moving in with him without taking the trouble of obtaining that parents consent. Fortunately however, when Mr. Van Praag, 1948 president of the ASPE, was in Columbus, he visited the American Institute National Headquarters, discussed the project thoroughly and gave it his presidential blessing.

From the outset it was decided that one of the best things that the new institute could do to help the Industrial engineering branch of the profession, would be to work with students who are trying to become industrial engineers. Accordingly, it was decided that student chapters would be organized but only at those institutions having curricula in industrial engineering accredited by the Engineers Council for Professional Development. Moreover, it was decided that students should not be expected to carry the work of the national society, consequently, dues were fixed at a very nominal

Cont'd on Pg. 12

About the AIIE

AIIE is the National Technical Society for Industrial Engineers. It is made up of engineers doing work in time study, wage incentives, standard costs, methods engineering, job evaluation, production control, personnel administration, organization structure control, and other related phases of Industrial Engineering. It is the pioneer in recognizing the difference between a professional society, such as the National Society of Professional Engineers on one hand, and the primarily technical society on the other.

The Institute adopted the general aims of the N.S.P.E. because it approved of the fine work done by that body in the field of professional registration of engineers, and its promotion of ethical practices.

MEMBERSHIP IN AIIE identifies the Industrial Engineer as a person of professional caliber engaged in a branch of engineering of constantly increasing prominence. It provides a fraternal meeting ground for Society members at local chapter meetings, at conferences and through the mail. Finally, it provides an excellent opportunity for members to exchange knowledge in the Journal.

THE CODE OF ETHICS of the AIIE shall be the Cannons of Ethics of the National Society of Professional Engineers.

THE NATIONAL ORGANIZATION of the AIIE consists of an association of all the members, divided into regions, as specified by the Executive Committee. The day-to-day operation of the affairs of the Society are conducted by the officers and Board of Trustees, within the limitations provided in the Constitution and By-Laws. Copies of these documents are available from the National Headquarters upon request.

LOCAL CHAPTERS are "outposts" of National Headquarters. Details regarding the establishment of locals are taken up on pg. 5 of this issue.

STUDENT CHAPTERS are chartered at schools having Industrial Engineering curricula accredited by the Engineer's Council for Professional Development. Exceptions are made in cases of schools having a pending accredited status.

In recognition of the great importance of the Industrial Engineers of the future, the Institute has made very liberal provisions for Student memberships and for easy transition on graduation from Student to Junior membership status. Student members enjoy the same benefits as Junior and Senior members except that they do not have an active voice in voting and business of Local Chapters and the National Association.

Membership Certificates

Many of our members are fortunate in having offices, or space in home studies where they would like to display a certificate showing their membership in an exclusive technical society. This need has now been met. A beautiful certificate has been designed and is being printed. This will bear the corporate seal of the American Institute and anyone who can do so will be proud to display it.

Use the new combined order for membership pins and certificates to place your order. Please be sure to spell your name exactly as you wish to have it endorsed on the certificate. The size selected was 8 x 10 inches for standard frames are readily available at low cost. It will be printed on a heavy rag stock ledger paper. The price of one dollar covers only the cost of manufacture, endorsing and mailing.

MEMBERSHIP REQUIREMENTS are designed after the standards of the ECPD because of the fine work done by that group in accrediting engineering curricula. There are four classes of members, as provided in Article IV, Section 2 of the Constitution:

A. Student members shall be regularly enrolled students of accredited curricula in Industrial Engineering. Student members may transfer to Junior membership upon graduation.

B. Junior members shall be engineers-in-training engaged in Industrial Engineering work or graduates of engineering curricula accredited by the ECPD and engaged in Industrial Engineering practice. Junior members may transfer to active membership upon receipt of their professional license or upon the attainment of five years of professional Industrial Engineering practice.

C. Active members shall be state licensed professional engineers engaged in Industrial Engineering practice or other persons who can present proof of long experience in Industrial Engineering practice.

D. Fellows shall consists of a small group of outstanding leaders in the profession, who are to be honored by being elected to this grade of membership. Fellows must have given at least 15 years of service to the Industrial Engineering profession and shall be selected by the Executive Council and approved by the National Convention. Not more than five per cent of the total membership is to be admitted to this group during any one year, the total number never to exceed ten per cent of the membership. The start of this group is to be left to the discretion of the Board of Trustees.

For any additional information, write to the National Headquarters, 214 Industrial Engineering Building, the Ohio State University, Columbus 10, Ohio.

Membership Campaign

The American Institute of Industrial Engineers can deservedly boast of its fine membership record since its inception fourteen months ago. The idea of the Institute brought immediate response. Hundreds of Industrial Engineers immediately sensed the need and possibilities of the organization and applied for membership. In order for the Institute to be effective in the purposes for which it was created, it is necessary that there be continued growth of membership. It is therefore essential that all existing members as well as incoming members undertake the personal responsibility of contacting qualified membership candidates. The National Headquarters will send application blanks and descriptive literature to members or directly to candidates.

It is to be understood that there is no desire to lessen the quality of the Institute by taking in any and all seeking to join. On the contrary, it has been necessary to decline the applications of some candidates. There are, however, thousands of fully qualified Industrial Engineers who have not learned of the Institute. There are also many others who are withholding application until they are fully convinced the Institute is a "going concern."

The National Headquarters is continuing its part of the membership campaign. Rosters of Registered Professional Engineers are being called from the various states. Letters with membership application blanks are being sent to those engineers who have qualified in the field of Industrial Engineering. Unfortunately, however, this procedure is not very thorough, since many of the states do not designate the branch of engineering in which the engineer is qualified. It is therefore requested that Institute members assist the National Headquarters by sending in lists of Registered Professional Engineers designated as Industrial Engineers or engaged in Industrial Engineering work. Those members residing in state capitol cities can be especially helpful in this effort.

It has been found that lists of alumni engaged either directly or indirectly in Industrial Engineering work, provide a good source of potential members. Members who have access to such information at colleges and universities can contribute greatly to the membership campaign by preparing such lists and sending them to National Headquarters.

As can be noted in the Table of Membership Statistics on page 4, the Institute has many more Student members than it has Senior members. This is considered to be a favorable sign of the ultimate strength of the organization, since a great number of the Student members are expected to become Junior members upon finishing school, taking advantage of the one year extension of the nominal Student member dues during the first year following graduation.

The American Institute of Industrial Engineers is destined to take its place beside the other great professional engineering societies. One of the major requirements for realization of this objective is getting names on the rolls. Let us, therefore, make it a point to pass on the good word to all potential membership candidates.

Local Chapters

Experience has proved that local chapter meetings provide an excellent medium for professional development of the engineer. Institute members in several cities have already established local chapters which are reported to be functioning with great success.

There are many advantages to be gained in the formation of local AIIE Chapters. The meetings, usually held monthly during the fall and winter, make it possible for members to discuss Industrial Engineering problems of mutual interest and to exchange ideas. Special papers are presented by members in some of the meetings. Occasionally guest speakers are called in. In some cases a dinner precedes the regular meeting. The dinner starts around 6:30 and is optional and separate from the regular meeting which begins around 8 o'clock.

The establishment of local chapters is a rather simple process. Upon request, National Headquarters will provide the names and addresses of members in a given locality. Ten or more members convene and vote to form a local chapter. Officers are elected and a constitution is drawn up. Samples of various local chapter constitutions are available from National Headquarters. Upon completing the constitution, the local group petitions the National Headquarters for a local chapter.

It should be apparent that there is no greater opportunity for the advancement of the Industrial Engineering cause than the local Institute chapter meetings. The meetings are invaluable not only for the purpose of exchanging Industrial Engineering knowledge but also as a basis for fraternal association of Institute members. It is therefore suggested that Institute members not presently associated with local chapters avail themselves of the opportunities therein, either by joining the nearest local chapter or seeking the formation of the same.

ALPHA PI MU

On January 25, 1945, Alpha Pi Mu, Industrial Engineering Honorary Fraternity, was officially founded on the campus of the Georgia Institute of Technology.

The field of Industrial Engineering has made tremendous strides in the past few years. Today it occupies a very vital place in the industrial world. Schools of Industrial Engineering are of major importance in engineering colleges throughout the country.

In view of these facts, a group of Industrial Engineering students on the Georgia Tech campus felt that there was a definite desire and need for an Industrial Engineering Honorary Fraternity, not only to aid in the promotion of a more cooperative and kindred spirit among men in the field, but also to give recognition to outstanding undergraduate and graduate students of Industrial Engineering as well as those men who have distinguished themselves through their work in the field in general.

With this in mind, Alpha Pi Mu was founded locally. The standards of membership are high, requiring that the candidate excell in scholastic ability, leadership, character, and achievement. The first initiation was held on March 10, 1949.

In addition, plans have been carried forth to establish Alpha Pi Mu nationally. A National Charter is now pending. Invitations are being sent to all schools having an Industrial Engineering curriculum, or a comparable four year course accredited by the Engineering Council for Professional Development, to organize local chapters on their respective campuses and affiliate with the national organization as soon as possible.

Membership Pins

As can be seen on the mast head of page 3, the Institute's official insignia is both attractive and interesting. It was selected in a contest in which members submitted suggested designs to an appointed emblem committee. The torch of the symbol represents the light of knowledge while the hourglass denotes time, which of course is of primary consideration to the Industrial Engineer. The shield, in addition to providing a background, represents the Industrial Engineering profession protecting the processes of production in the interests of society.

The Institute has arranged for membership pins bearing the official insignia at a very nominal cost. These pins are of beautiful design and are similar to the mast head of page 1. There are three types of pins; the pin-on type, the lapel button type and the eyelet type which can be attached to the watch chain. These three types are available in two compositions; yellow gold filled priced at $1.75 postage and tax included, and ten carat gold at $2.75 postage and tax included. The order blank inserted in this issue is to be used in ordering membership pins.

Ohio State Chapter Alpha Pi Mu

On Saturday May 7, 1949 a team of seven student members and Professor Wilcox, an honorary, from the Georgia Tech Chapter visited Columbus and installed the second chapter of Alpha Pi Mu at Ohio State University, Department of Industrial Engineering. A class of 23 students and 4 honorary (faculty) members was initiated in the afternoon and a very enjoyable banquet gathering was held in the evening.

Members of the visiting group were, George Lane, Charles Fiveash, B. L. Brook, W. R. P. Wilson, James L. Elrod, E. R. Hunter, Bill Granberry, A. N. Boissy, Alan E Thomas, and Ernest Sturgis.

Plans were discussed for development of additional chapters at other schools having accredited curricula in Industrial Engineering. It is the feeling of all who participated that this move marks another long forward step in the growth and recognition of Industrial Engineering.

Cont'd from Pg. 9

fee of $1.00 per year in the student classification and provision was made that a student graduating and thereby automatically becoming a junior member of the senior society could still continue for this nominal rate of $1.00 which incidently is the subscription price for the Journal of Industrial Engineering. At the present time, we have nine student chapters with the total of 600 members.

According to the 1940 census there were 9000 individuals in the United States calling themselves Industrial Engineers. We suspect of course that a goodly percentage of these may have been stop watch jockies or other technicians who appropriated the title of industrial engineer. But after making allowance for such cases and for possible growth there are no doubt in excess of 5000 real industrial engineers in the country. Our problem is to locate them. Unfortunately, many of the directories published by state boards of registration which have come into our possession so far do not indicate which branch a registered professional engineer practices in. We have made some progress by obtaining alumni lists from the colleges and some large industrial companies have furnished us lists of their employees, but we are handicapped in our membership campaign by lack of knowledge of who and where the qualified industrial engineers are.

In conclusion I wish to thank the Board of Trustees for the privilege that I have enjoyed of talking to you this evening and express the assurance that the American Institute of Industrial Engineers will make every effort to foster cooperation between the professional and technical society in every way that can be thought of by members of either organization.

Who's in Industrial Engineering

One of the greatest services the Institute can render its members is to furnish a means whereby members may become acquainted with each other. The Institute is therefore making plans to ultimately publish a book entitled Who's In Industrial Engineering. This will be something more than a membership dictionary; it will include a brief biological sketch of each member. It is expected that this book will also be of service to employers desiring accurate information pertaining to the academic and industrial background of Institute members. A sample of the information to be given in the book is shown below.

In order to provide the information necessary for the directory, each member is requested to completely fill out the Who's In Industrial Engineering Information Blank inserted in this issue and mail the same to the National Headquarters. Just prior to the printing of the book, members will be asked to provide information regarding change of employment since submitting these information blanks.

Who's in Industrial Engineering
Sample Entry

DOE, John H., Ind. Engr.; res. 15 Elm St., Pittsburgh Pa.

Ind. Engr.; b. St. Louis, Mo., July 17, 1910; S. Richard and Mary (Brown) Dow; end. Ga. Tech, Atlanta, Ga., B.I.E.; Columbus U., N.Y., M.S. in I.E.; m. St. Louis, Mo. June 6, 1935, Helen Roe; ch. Helen Louise 1939; Wm. Ernest, 1949; exper. Student Engr., G. E. Co., Schenectady, N.R., 1935-42; Sr. Ind. Engr., Ajax, Inc., Pittsburgh, Pa., 1942-45 and Chief Ind. Engr. 1945-date; member, AIIE; Tau Beta Pi; Sigma Xi; Reg'd Prof. Engr., Penna; Author Time Studies for Non-Repetitive Operations, Factory, Vol 1110, No. 4; Putting Inspectors on Incentive, Journ. of Ind. Engr., Vol. 12; (book) Job Evaluation, McGraw-Hill, 1947.

Chapter Charters

In response to many requests, Charter certificates have been prepared and will be forwarded to each chapter as soon as they are delivered by the printer and properly endorsed with the name of the chapter. It has not been possible to design this to contain the names of the Charter Members. Some of the chapters have had as many as one hundred such members. However, where the group is not too large there will be ample room for the organizing group to sign the margins of the certificate.

Where it is not possible to put the names on the margin, a supplementary form will be provided by the National Headquarters for any chapter which requests it.

Selling Industrial Engineering

One of the most frequent comments in letters from members is about the necessity of selling Industrial Engineering. These letters reflect the general feeling that the field of Industrial Engineering would well benefit from some public relations work. Many companies are aware of the need of men capable of establishing "scientific methods" but are unfamiliar with the requisites necessary for accomplishing these ends. This is frequently evidenced by company scouts who interview mechanical engineers, then proceed to describe the academic qualifications desired which are highly stressed in the Industrial Engineering curriculum. At the other extreme, there are those who hire commerce or business students to train as "Industrial Engineers."

There is nothing amazing about this situation to those who have been in Industrial Engineering for some time. Industrial Engineering is one of the more recent branches of engineering and is necessarily going through the same development "growing pains" experienced by electrical engineering, when this branch set itself separate from mechanical engineering. Going back even farther, the original engineers were military or civil engineers. The machine age, however, necessarily converted many of these engineers to the specialized field of mechanical engineering. Of course, the advent of mechanical engineering as well as electrical and more recently Industrial Engineering was greeted with scoffing and scorn.

Most industrial Engineers are sold on Industrial Engineering and are certain of its ultimate station in society. To the unfamiliar or "doubting Thomases", however, it would indeed be helpful to seek the answer to "What is an Industrial Engineer?" from those large well established industrial concerns who readily credit Industrial Engineering's scientific methods as being a principal factor in their success.

The Institute is determined to do everything in its power to dispel the cloud of uncertainty and misunderstanding regarding Industrial Engineering. The Journal will be very effective in this objective, since it is to be mailed to the crucial points in industry. Even more effective, however, will be the members of the Institute, selected on the basis of their true merits as Industrial Engineers. Each member will avail himself of every opportunity to convey the real meaning of Industrial Engineering to the public and thereby hasten the day when our profession will be unquestionably recognized by all as an essential, specialized branch of engineering.

Cont'd from Pg. 7

Reports showing actual issues, completions and availability are sent to the control room every day, and are posted in blue, red and green solid lines. Comparison of the broken and solid lines of each color shows whether or not each phase of the work is progressing according to schedule.

Any marked deviation from the plan, which causes a continued increase in the number of available jobs indicates that shop manpower and facilities must be increased or that part of the work must be sub-contracted. If the number of available jobs shows a consistent downward trend, the flow of work to the shop must be increased or personnel must be shifted to other work.

The flow of work through the purchasing department is shown on still another line graph, which is similar to that used for the detail parts manufacturing department, except that no schedule lines are shown. Progress of the work is expressed in numbers of purchase requisitions converted into purchase orders placed with materials suppliers.

The purchasing department is authorized to purchase materials by the requisitions it receives from the materials control department. Each day a report is sent to the control room. This report shows the number of requisitions received, the number for which orders have been placed, and the number on hand but not covered by orders to suppliers. These figures are posted to the graph in blue, red and green lines, respectively. Prolonged upward or downward trends in the backlog show the need for increased personnel to process the requisitions or for increasing their flow to the purchasing department.

A pictorial or positional chart is used to show the status of the work on the assembly floor. This chart is simply a modification of the floor plan of the assembly building. The various assembly positions and fixtures are indicated by black blocks or by silhouettes of airplanes. In addition silhouettes are shown to represent ground test and flight test operations, and deliveries of finished ships.

Daily reports which show the movements of assemblies and ships through the various positions are posted to the chart by means of cardboard tags. Each tag has a ship number on it. The tags are moved about as the assemblies and ships move. Tags of different colors are used to indicate the actual progress of the work. Assemblies or ships ahead of schedule are represented by green tags, those on schedule by white tags. Red tags indicate items behind schedule, and red tags with horizontal white stripes identify assemblies or ships on which work has stopped due to shortages of parts.

Assembly time cycle charts are prepared for each major airplane section, such as center wing, forward fuselage, outerwing and so forth--and for final assembly, ground test and flight test. These are bar chests. Ship numbers are listed at the left and right sides of the chart and date strips are printed across top and bottom. Opposite each ship number a black tape is attached, extending from the scheduled starting date to the scheduled completion date in accordance with the master production schedule.

The actual starting and completion dates for these assemblies and tests are posted from daily reports which are submitted by the departments responsible for the work. When an assembly is actually begun, a red tape is started on the chart for it, under the black tape previously attached. The red tapes are extended every day until the work they represent is completed. On the completion date, a green tip is attached to the red tape to distinguish the completed tape from those which are still in progress.

The time cycle chart shows past and present performance, and makes possible the forecasting of trends in the work covered. The black tapes are attached before the chart is mounted. The ends of these tapes form a pattern similar to a graph line. The red tapes should duplicate both the pattern and the date strip location of the black tapes. Red tapes which extend to the right, beyond the black, show assemblies or ships that are behind schedule. When the red tapes begin farther to the right than the black tapes, the need for corrective action is indicated.

The great number and variety of charts maintained in the Control Room precludes a full discussion here. Those mentioned deal with problems widely encountered in industry. Other, such as those concerning the control of engineering design changes, or "growth" charts showing the interlocking sequence of operations on pilot or first-run ships, are particularly applicable only to the manufacture of products as complex and as subject to change as are aircraft.

Photos: P-32255, 57, 58, 59 & 60.

Students' Management Conference

Alabama Student Chapter has pointed the way by holding the first Management Conference since the establishment of the Institute.

On April 8 and 9, at the University of Alabama, Students from the Universities of Alabama, Florida, and Tennessee, Georgia Institute of Technology, Mississippi State College, and Alabama Polytechnic Institute gathered under the joint auspices of the Student Chapters of AIIE and SAM for four sessions of papers and a banquet meeting.

At the first session on Friday afternoon, two papers were presented, Charles Flynn, of Mississippi State College, on the subject of "College Training for A Career in Management," with Harold D. Haldeman of the University as discussion moderator. The second speaker was Don Brown of the University of Florida, with Wm. A. Granberry of the Georgia Institute of Technology as moderator on the topic of "Industrial Promotion Research".

At the Banquet Friday evening, Dr. Henry G. Hodges, management engineer and former Dean at the Air Force Institute of Technology, Wright Field, spoke on "Method Improvement". Mr. Cade Verner, Jr., President of the SAM Chapter, presided. On Saturday morning Mr. Lewis Johnson of the Alabama Polytechnic Institute spoke on "The Advantage of Applying Color Dynamics in Industry Today." Mr. Chris Kyle, of the University of Alabama moderated. The next paper, entitled "Management in Industrial Relations" was presented by Mr. David Atkins of the Georgia Institute of Technology. The moderator was Mr. E. S. McBride of the University of Tennessee. The last paper of the morning session was presented by Mr. E. M. Bartee of the University of Alabama who spoke on "What is the Nature of Our Time-Study Problem -- Scientific, Administrative, or Selling?" Mr. R. H. Rueff, Jr., of the Mississippi State College, was the moderator.

The afternoon session consisted of two papers. Mr. A. E. Thomas, president of the Georgia Tech Chapter of Alpha Pi Mu, spoke on "Industrial Engineering Honorary Society," Mr. Rhett Ball, management consultant, Methods Engineering Council, Inc., presented a paper entitled, "We've Just Come Around the Corner," a discussion of the importance of reducing costs during a period of lowering retail prices. Mr. Joseph Hoffman, Chairman of the Student Chapter of the AIIE, University of Alabama, presided.

All of the meetings were well attended and the consensus was that the idea of a conference by and for students is very well worthwhile. Work has begun immediately to arrange for a 1950 "Southeastern Conference" to be held at Georgia Tech.

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Men Available for Employment

Companies interested in any of the men listed below should address them in care of the office of the Journal of Industrial Engineering.

S49-1 Industrial Engineer, Experienced factory manager, Minimum salary required $8,000. Detailed information upon request.

S49-2 M.E. from Cincinnati, M.Sc. (I.E.) from OSU, is looking for an opening in process engineering or editorial work. Varied background includes three years with a large mid-western machine tool manufacturer; in research; in advertising; editing a magazine and two years as instructor of Industrial Engineering at a large University. Salary open. Location in a larger city preferred. Applicant is willing to accept propositions involving foreign service. He speaks, reads and writes German fluently and has some French.

S49-3 B.S in M.E., M.S. in I.E. Formerly employed as record engineer with home appliance manufacturer, duties included technical research, report writing and production liaison work. M.S. thesis in personnel area. Special work in personnel research, labor problems and related fields including quality control. Prefers work in industrial supervisory nature or in public or industrial relations. Will consider any location in the U.S. Minimum Salary required: - $4500.

S49-4 Age 25, single. Experience in production control, scheduling, routing and expediting of special engineering products. Desires to become connected with progressive concern in sales engineering or in production engineering. Salary requirements depend on opportunity for advancement and location.

New Folder Describes Micro-File Equipment

A new, 8-1/2 x 11-inch, 12-page pamphlet, describing Kodagraph Micro-File equipment for business and industry, has been published by the Eastman Kodak Company and is available without charge from Kodak's Industrial Photographic Division, 343 State Street, Rochester 4, New York.

Profusely illustrated, the pamphlet describes four models of Kodagraph Micro-File machines, as well as the Kodagraph Micro-File Reader, Enlarger, and Projector.

The Kodagraph Micro-File Film Unit, used with the Kodagraph Micro-File machines, automatically exposes and advances the film, contains a field indicator which shows the exact area of the document which appears on the film, and can be adapted to use 16mm. film -- either perforated or unperforated -- as well as the standard 35mm. film.

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More Breakeven Charts

Reviewed by Loring G. Mitten

THE ECONOMICS OF INDUSTRIAL MANAGEMENT (451 p.) - Walter Rautenstrauch and Raymond Villiers - Funk & Wagnalls ($5)

The recent shift from buyer's to seller's market and increase in competition in many lines of business should add the exclamation point to this book's principal contention -- consistently profitable operations can be assured only through rational analysis and management of the financial affairs of a business. The authors attack three phases of the problem of rational management in the three sections into which the book is divided.

Part I, entitled "Visualizing the Business", deals with the application of the break-even chart to various economic problems. It also includes introductory material which provides a background for understanding the construction and use of the break-even chart. This section is well developed and presents a number of fairly detailed actual case histories illustrating the practical utility of the methods advocated by the authors.

Part II, "Industrial Cost Characteristics", treats interest and depreciation calculations, classification and allocation of expenses, and methods of choosing among alternatives. The last subject, choosing among alternatives, is probably the weakest part of the book: too much has been attempted in too little space and the chapter is replate with formulas which simply invite misapplication. The rest of Part II gives an adequate treatment of fairly standard material.

Part III, "The Business as Part of the National Plant", is a brief exploration of some of the relationships between the individual enterprise and the economy as a whole, covering such topics as inflation, production and demand, and industrial expansion. Several interesting techniques are outlined for the analysis of factual date relating the individual business to various elements of the economy as a whole.

The book is very practical throughout and should prove quite convincing even to those industrial managers who still feel that analytical methods, such as the break-even chart, are "new fangled" and essentially valueless in dealing with practical problems.

Both the value and the weakness of the book stem from the wide scope of subjects which have been included. Many different aspects of financial management have been brought together so that the relationship among them can be grasped, but in some cases this integration has been achieved through sketchy presentation and explanation.